THE VERTEBRATE FAUNA OF NUYTS ARCHIPELAGO, SOUTH AUSTRALIA

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Summary

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The St Francis group of islands in Nuyts Archipelago was visited by a joint Royal Society of South Australia and Fisheries Department of South Australia expedition in January, 1971. Seven species of mammals, twenty-seven species of birds and sixteen species of reptiles are recorded, together with comments on their habitat and abundance. The potential of the islands for fauna conservation is briefly considered.

Introduction

The study of the fauna of islands can provide useful insights into the biogeography of the fauna on the adjacent mainland. Many islands along the southern coast of Australia were connected to the mainland when sea level fell during the Pleistocene glaciations, and samples of the coastal flora and fauna were preserved on these islands as the sea level rose during the interglacial periods (Main 1961). With the accumulation of information on the flora and fauna of these islands and the adjacent mainland, including the palaeofaunas and floras, it may eventually be possible to reconstruct the biological history of southern Australia from the Pleistocene to the present. Further, as information is assembled on the present habitat preferences and tolerances of mainland species, data on island faunas may assist the construction of a palaeoclimatic history for southern Australia. Another important aspect of islands is their suitability for conservation. Many of the islands around southern Australia preserve relict populations of species that are rare or extinct on the mainland. Studies such as this should therefore contribute to the management of these islands as fauna sanctuaries maintaining these important populations.

This paper discusses the species of mammals, birds and reptiles recorded from the St Francis Island group of Nuyts Archipelago during the joint Royal Society of South Australia and Fisheries Department of South Australia expedition there in January, 1971, together with some additional information gathered by subsequent visitors to the islands.

The expedition visited four islands: St Francis, Masillon, Fenelon and Dog. Mammal trapping was carried out on St Francis I. (4 nights), Dog I. (1 night) and Masillon I. (1 night). Since then trapping has been carried out on Egg I. (D. Murray, pers. comm.). Data were obtained from animals caught in traps or observed by spotlight, from collection of bones and from signs of mammal activity. Sherman and wire cage traps were used in trap lines for a total of 153 trap nights (St Francis I. 105, Dog I. 19, Masillon I. 19, Egg I. 10). Traplines and spotlight surveys covered all vegetation associations on the islands and gave a wide coverage of the areas. Specimens have been lodged in the South Australian Museum (SAM); registration numbers are cited.

The bird list is based on the observations of all members of the expedition and compiled by Mr P. Macrow. The records generally represent sight records, but where doubt existed as to the identity of a species, a specimen was shot for a positive identification.

The reptile list is primarily from collections made on St Francis I. Only part of a day was spent looking for reptiles on Dog, Masillon and Fenelon Is.

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MAMMALS

Mammals previously recorded from St Francis I. include the bandicoot *Isoodon obesulus nauticus* and a rat kangaroo, presumed to be a species of *Bettongia*, which had become extinct by the 1920s (Wood-Jones 1924; Verco 1935). Three terrestrial and two marine species are now added, and these are marked by an asterisk in the list which follows. In addition, skulls collected on the island enabled identification of the species of *Bettongia*.

Family **PERAMELIDAE**

Isoodon obesulus (Shaw). SAM, M8546-M8549. *Short-nosed bandicoot*. St Francis I.

A common animal preferring the grassy areas on the higher parts of the island but also occurring in the saltbush steppe association covering the remainder of the island. These bandicoots have survived the introduction of cats and the conversion of a large part of the island to grassland by cultivation. *I. obesulus* remains common in south-eastern and south-western Australia and there are populations on Kangaroo I. (Andrewartha & Barker 1969) and Franklin I. (Watts 1974).

Family MACROPODIDAE

Bettongia penicillata (Gray). SAM, M8353. *Brush-tailed bettong*. St Francis I.

Fragments of skulls were found in the sandhills behind Petrel Cove, but living animals were not observed. Bettongs were reported to be very common when St Francis Island was first settled. Wood-Jones (1924) and Verco (1935) reported that the settlers introduced cats to the island to exterminate the bettongs which were causing damage to vegetable gardens. It seems likely that alteration of habitat may have also played a part in their decline, as this species nests in dense cover such as that formerly provided by the sclerophyll shrub community on the higher parts of the island. The settlers completely destroyed this habitat through clearance for wheat growing. *B. penicillata* was formerly widespread throughout the southern half of Australia but now appears to be confined to southwest Western Australia.

***Macropus eugenii** (Desmarest). SAM, M8575. *Tammar wallaby*. St Francis I.

A single tooth row of this species was found in the sandhills behind Petrel Cove. No living animals were found. The settlers did not report tammars on the island and it is possible that they were either already extinct, that the individual collected was introduced at some time, or that it was left by sealers known to have collected large numbers of wallabies on other islands (N. Wace pers. comm.). They were formerly widespread on the south and south-west Australian mainland and populations were recorded from Kangaroo I., Flinders I., St Peters I., and a number of Western Australian islands. Today, in South Australia, tammars remain common only on Kangaroo I. and on Greenly I. where they were introduced (Mitchell & Behrndt 1949); the St Peters I. population is extinct, the Flinders I. one is almost extinct and the mainland population is reduced to a remnant on Eyre Peninsula (P. Aitken pers. comm.).

Family **MURIDAE**

***Rattus fuscipes** (Waterhouse). SAM, M8541-M8545, M8598-M8600. *Bush rat*. Masillon and Dog Is.

This species appeared to be common on these islands, where it nested in limestone crevices and, possibly, mutton bird burrows. It seems unlikely that the smaller islands of Nuyts Archipelago ever supported mammals larger than *R. fuscipes*. Its absence from Egg Island suggests that this island may be too small to support a population of *R. fuscipes*. We did not see or collect this rat on St Francis I. where there are extensive areas of suitable habitat, but again they may have been exterminated by cats.

***Rattus rattus** (Linn.). SAM, M8551. *Black rat*. St Francis I.

Two lower jaws of this introduced species were collected in the sandhills behind Petrel Cove. No living animals were caught. *R. rattus* was undoubtedly introduced by the early settlers to St Francis I. and has since become extinct.

Family **OTARIIDAE**

***Neophoca cinerea** (Peron & Lesueur). *Australian sea lion*. Fenelon I.

This species visits all the islands and there is a breeding colony on the beach of Fenelon Island. In January 1971 this colony numbered approximately 50 individuals, including a number of pups. D. Murray (pers. comm.) provided the following estimates of the size of this colony in February 1973: mature bulls 7, pups 8, cows and immature bulls 36. The number of individuals in the vicinity of the beach was 56-58.

A South Australian National Parks and Wildlife Service expedition in June 1975 was unable to land on Fenelon I., but a count from the boat showed mature bulls 4, pups 5, cows and immature bulls 3. They also noted a possible breeding colony of this species on Dog I. Numbers recorded for this colony were bulls 3, cows and immature bulls 10. In addition 20 sea lions were seen on Freeling I.

***Arctocephalus forsteri** (Lesson). *New Zealand fur seal.* Fenelon I.

The South Australian National Parks and Wildlife Service expedition in June 1975 noted 40 fur seals on Fenelon I. No evidence of breeding was observed. They also noted 5 fur seals on Freeling I.

BIRDS

No systematic list of the birds of the St Francis Group has been compiled. The following list contains comments on habitat and abundance of birds observed during the 1971 expedition.

Family **SPHENISCIDAE**

Eudyptula minor (Stephens). *Little penguin.* St Francis I.

Common around the shores of Petrel Bay; most of the birds were in a heavy moult.

Family **PROCELLARIIDAE**

Macronectes giganteus (Gmelin). *Giant petrel.* Dog I.

Beach washed specimen.

Puffinus tenuirostris (Temminck). *Short-tailed shearwater.* All islands visited except Fenelon.

Nesting burrows were found wherever sufficient soil depth allowed excavation. Approximately one-third of St Francis I. was covered by the burrows. During the day most burrows contained one adult bird and one egg in an advanced stage of incubation. At approximately 20.00 hours each evening vast numbers of birds returned to the island from feeding at sea.

Family **OCEANTIDAE**

Pelagodroma marina (Latham). *White-faced storm petrel.* Dog and Fenelon Is.

Dried remains and wings were found. Small burrows on Fenelon I. may belong to this species.

Family **PHALACROCORACIDAE**

Phalacrocorax varius (Gmelin). *Pied cormorant.* St Francis I.

A small number of birds were fishing in Petrel Bay and roosting in company with black-faced cormorants at the eastern end of the bay.

Phalacrocorax fuscescens (Vieillot). *Black-faced cormorant.* St Francis I.

Approximately 20 birds roosted on the eastern headland of Petrel Bay.

Family **ANATIDAE**

Cereopsis novaehollandiae (Latham). *Cape Barren goose.* St Francis I.

Approximately 50 geese were observed and flocks of 3 to 20 were seen feeding on the eastern end of the island near the lighthouse. The geese congregated around three small fresh water soaks above granite boulders on the eastern end of the island. Goose droppings were also found on Masillon I.

Anas sp. Unidentified teal. Egg I.

One bird was seen at sea near this island.

Family **ACCIPITRIDAE**

Haliaetus leucogaster (Gmelin). *White-breasted sea eagle.* St Francis and Masillon Is.

Several adults and one immature bird were observed flying over St Francis I. and three adult birds were seen flying over Masillon I.

Family **PANDIONIDAE**

Pandion haliaetus (Linn.). *Osprey.* St Francis I.

One or two birds were observed on most days at the eastern end of the island near the lighthouse. Old nests of sea eagles or ospreys were found on the eastern side of Dog I. and the southern side of St Francis I.

Family **FALCONIDAE**

Falco peregrinus (Tunstall). *Peregrine falcon.* Masillon I.

Only a single bird was observed.

Falco cenchroides (Vigors & Horsfield). *Nankeen kestrel.* St Francis, Dog and Masillon Is.

Several pairs on St Francis I.

Family **PHASIANIDAE**

Coturnix pectoralis (Gould). *Stubble quail.* St Francis I.

Several birds were flushed in the grassy area near the lighthouse.

Family **RALLIDAE**

Rallus philippensis (Linn.). *Banded landrail.* St Francis and Dog Is.

This species appeared common on St Francis I. and two specimens were collected. Only two birds were sighted on Dog I.

Family **HAEMATOPODIDAE**

Haematopus fuliginosus (Gould). *Sooty oystercatcher.* All islands visited.

A common bird of the rocky shorelines.

Family **CHARADRIDAE**

Vanellus miles novaehollandiae (Stephens). *Spur-winged plover.* St Francis I.

Eight to ten birds were observed feeding around the shores of Petrel Bay.

Charadrius rubricollis (Gmelin). *Hooded dotterel.* St Francis I.

From two to ten birds were seen on the beach in Petrel Bay each day.

Charadrius alexandrinus (Linn.). *Red-capped dotterel.* St Francis I.

One bird was observed on the beach in Petrel Bay in company with four Red-necked stints.

Family **SCOLOPACIDAE**

Calidris ruficollis (Pallas). *Red-necked stint.* St Francis I.

Four to eight birds on the beach in Petrel Bay. One specimen collected.

Family **LARIDAE**

Larus novaehollandiae (Stephens). *Silver gull.* St. Francis I.

Nine to ten birds on the beach in Petrel Bay.

Larus Pacificus (Latham). *Pacific gull.* All islands.

A common bird of these islands. Adults and immature birds were present in about even numbers. Approximately 20 birds foraged along the shores of Petrel Bay.

Hydroprogne tschegrava (Lepechin). *Caspian tern.* St Francis and Dog Is.

Two birds noted on each island.

Family **PSITTACIDAE**

Neophema petrophila (Gould). *Rock parrot.* Found on all islands visited.

Numerous small flocks were flushed while walking on St Francis I.

Family **HIRUNDINIDAE**

Hirundo tahitica neoxena (Gould). *Welcome swallow.* Found on all islands visited.

A common bird. Old nests in houses, lighthouse shed and caves.

Family **MOTACILLIDAE**

Anthus novaeseelandiae (Gmelin). *Pipit.* All islands visited.

Abundant.

Family **MELIPHAGIDAE**

Meliphaga virescens (Vieillot). *Singing honeyeater.* All islands visited.

A very common bird. Eight to ten birds were present in the camp area at all times.

Family **CORVIDAE**

Corvus coronoides (Vigors & Horsfield). *Australian raven.* St Francis I.

Common; a flock of approximately 30 birds was observed as the expedition landed. Small flocks were seen daily, foraging amongst the mutton bird burrows. The lighthouse tower was a favoured roost, and nest remains were found here. Other nests were found on low bushes.

REPTILES

Eleven species of reptiles are listed or mentioned for Nuyts Archipelago by Proctor (1923), Waite (1923) and Worrell (1963). Our expedition added another five species; these are indicated by an asterisk in the list below. The islands of the group from which each species is now known is also recorded. Some contrasts between the abundance of several species on St Francis and other offshore islands in the Bight are noted in the list below. Possibly the drier climate of the Nuyts Group is responsible.

Family **GEKKONIDAE**

***Underwoodisaurus milii** (Bory). SAM, R12858, R12863, R12870, R12876, R12889. St Francis, Masillon, Fenelon, Dog Is.

Common under limestone boulders or in burrows in the sand by day.

***Heteronotia binoei** (Gray). SAM, 12878. St Francis I.

Common under stones by day.

***Phyllodactylus marmoratus** (Gray). SAM, R12865, R12877. St Francis, Fenelon Is.

Surprisingly uncommon, for this is a very abundant species on some other off-shore islands. Found only under aeolianite slabs on exposed coastal areas.

Family **PYGOPODIDAE**

Lialis burtonis (Gray). SAM, R12896. St Francis I.

Only one seen during the visit.

Aprasia striolata (Lutken). Recorded for St Francis I. by Kluge (1974); this is the specimen referred by Proctor (1923) to *Delma fraseri*. No *Aprasia* was collected in 1971.

Family **AGAMIDAE**

Amphibolurus fionni (Proctor). SAM, R12874, St. Francis I.

Found only among the exposed granite around the edges of the island. Wood-Jones did not find it (Proctor 1923), but Worrell (1963) has recorded it from St Francis I.

Family **SCINCIDAE**

Hemiergis peronii (Fitzinger). SAM, R12862, St Francis, Dog and Fenelon Is.

Surprisingly infrequently seen; like *P. marmoratus*, this is a common species on other offshore islands.

Egernia multiscutata (Mitchell & Behrndt). SAM, R12857, R12861, R12873, R12888. St Francis, Dog, Masillon and Fenelon Is.

A very common species on the sandier parts, burrowing under rocks or bushes and using the mutton-bird burrows for quick retreats.

Lerista frosti (Zietz). SAM, R12859. Masillon I.

Another species usually common on offshore islands but very scarce in the Nuyts group.

***Lerista** sp. (near **picturata**). SAM, R12880. St Francis I.

A large member of the genus, with forelimbs reduced to dimples and two toes on each hind limb. Commonly found buried in sand under stones.

***Menetia greyii** (Gray). SAM, R12875. St Francis I.

Rarely seen, probably because it is small, quick and secretive.

Morethia obscura (Storr). St Francis I.

Again, rarely seen and very difficult to catch, no specimens collected.

Tiliqua branchialc (Gunther). SAM, R12864, R12879. St Francis, Fenelon Is.

Common in litter and around the buildings.

Family **BOIDAE**

Morelia spilotes variegata (Gray). *Carpet snake*. St Francis I.

Commonly seen in the morning and late afternoon, no specimens collected.

Family **ELAPIDAE**

Drysdalia coronoides (Gunther). SAM, R12860, R12881. *White-lipped snake*. St Francis, Masillon and Fenelon Is.

Not frequently seen, but probably quite common.

Notechis ater (Krefft). SAM, R12895. *Tiger snake*. St Francis I.

Usually common on mutton-bird islands, yet only a few were seen even at night.

Discussion

The vertebrate fauna of the St Francis I. group of Nuyts Archipelago is quite diverse and remains relatively undisturbed and relatively free from introductions. The fauna of most South Australian islands and indeed of the mainland adjacent, is still incompletely known, and so biogeographical interpretations are difficult at this stage. However, some comments may be made on the importance of these islands in conservation.

Island faunas are extremely vulnerable to man's interference, and the fate of *Bettongia penicillata* on St Francis I. illustrates this point. If further work there definitely establishes that this species is extinct, the opportunity exists to re-establish dense vegetation on the island and introduce *B. penicillata* from Western Australia. This should succeed as cats are no longer present on the island. It is obviously a long-term project but it merits consideration because the island population could ultimately serve as a reservoir of animals for release in suitable areas of their former mainland range. In addition, if *Rattus fuscipes* is absent from St Francis I. it could be re-introduced from neighbouring islands.

The majority of the birds observed are common on all islands in the area and on the adjacent coast, but a notable exception is the Cape Barren goose. The total world population of this endemic Australian species, although it is increasing, is still dangerously low, and so every attempt should be made to conserve the known populations from disturbance.

References

ANDREWARTHA, H. G. & BARKER, S. (1969).—Introduction to the study of the ecology of the kangaroo island wallaby *Protemnodon eugenii* (Desmarest) within Flinders Chase, Kangaroo Island, South Australia. *Trans. R. Soc. S. Aust.* **93**, 127-132.

KLUGE, A. G. (1974).—A taxonomic revision of the lizard family Pygopodidae. *Misc. Publ. Mus. Zool. Univ. Mich.* **147**, 1-221.

MAIN, A. R. (1961).—The occurrence of Macropodidae on islands and its climatic and ecological implications. *J. Proc. R. Soc. W. Aust.* **44**, 84-89.

MITCHELL, F. J. & BEHRNDT, A. C. (1949).—Fauna and flora of the Greenly Islands, Part I, Introductory narrative and vertebrate fauna. *Rec. S. Aust. Mus.* **9**, 167-179.

PROCTOR, J. B. (1923).—The flora and fauna of Nuyts Archipelago and the Investigator Group. No. 5—The lizards. *Trans. R. Soc. S.* Aust. **47**, 79-81.

VERCO, J. C. (1935).—*In* B. C. Cotton (Ed.), "Combing the Southern Seas", chapter 8. (Rigby: Adelaide).

WAITE, E. R. (1923).—The flora and fauna of Nuyts Archipelago and the Investigator Group. No. 10—The snakes of St Francis Island. Together with a note on the name of the geographical group. *Trans. R. Soc. S. Aust.* **47**, 127-128.

WATTS, C. H. S. (1974).—The Nuyts Island bandicoot (*Isoodon obesulus nauticus*). *S. Aust. Nat.* **49**, 20-24.

WOOD-JONES, F. (1924).—"The mammals of South Australia. Part II: The bandicoots and the herbivorous marsupials." (Govt Printer: Adelaide).

WORRELL, E. (1963).—"Reptiles of Australia". (Angus & Robertson: Sydney).